REMARKS

The present application was filed on December 28, 1999 with claims 1-15. New claims 16-25 were subsequently added by amendment. Claims 1-25 are currently pending, with claims 1, 6-10 and 22 being the independent claims.

Claims 1-25 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,167,469 (hereinafter "Safai") in view of U.S. Patent No. 6,788,336 (hereinafter "Silverbrook"), U.S. Patent No. 5,732,138 (hereinafter "Noll"), and RFC1750 by Eastlake et al. entitled "Randomness Recommendations for Security" (hereinafter "Eastlake").

In this response, Applicants amend independent claims 6, 7, 8 and 10, and traverse the §103(a) rejection. Applicants respectfully request reconsideration of the present application in view of the amendments above and the remarks below.

Independent claim 1 recites a digital camera having a processor that generates a random seed entirely from sensor noise within the digital camera. The processor is further specified as using the random seed to generate a private key and a public key. The private key is stored in a memory in the digital camera for subsequent use in encryption of a hash of a digital image to produce an image authentication signature. This approach advantageously overcomes a number of problems associated with conventional arrangements. For example, it avoids the serious security concerns that can arise when a manufacturer or user has to generate a private key external to the camera and subsequently load the private key into the camera. See the specification at page 1, line 20, to page 2, line 16, and page 2, lines 25-30.

Applicants initially note that a proper *prima facie* case of obviousness under §103(a) requires that the cited references must teach or suggest all the claim limitations, and that there be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify or combine the reference teachings. See Manual of Patent Examining Procedure (MPEP), Eighth Edition, August 2001, §706.02(j).

Applicants submit that the Examiner has failed to establish a proper *prima facie* case of obviousness in the §103(a) rejection of claims 1-25, in that the

proposed combination of references fails to teach or suggest all the limitations of the claims, and in that no cogent motivation has been identified for modifying or combining the reference teachings to reach the claimed invention.

With regard to independent claim 1, the Examiner in formulating the §103(a) rejection argues that the combined teachings of Safai, Silverbrook, Noll and Eastlake meet each and every limitation of the claim. The Examiner characterizes Safai as teaching "a processor located within the digital camera for generating [a] private key and a public key," relying on column 4, lines 1-15, column 7, lines 30-40, and claim 29 of Safai. See the Office Action at page 3. Applicants respectfully disagree with this characterization of Safai. There is no teaching or suggestion in Safai to the effect that a private key is generated within a digital camera. At column 16, lines 29-30, Safai indicates that a private key is "stored in the camera," but nowhere does Safai disclose that the private key that is stored in the camera is generated within the camera itself. The portions of the Safai reference relied on by the Examiner in this regard fail to indicate with specificity that the private key is generated within the camera, and to the contrary are entirely consistent with generation of the private key external to the camera as in the conventional arrangements described by Applicants at page 1, line 20, to page 2, line 16, of their specification. Thus, it appears that the Examiner has mischaracterized the teachings of Safai in formulating the §103(a) rejection, and that Safai would suffer from the very same problems as the conventional arrangements identified by Applicants in their specification.

The Examiner acknowledges certain deficiencies in Safai as applied to claim 1, but argues that these deficiencies are overcome by teachings in Silverbrook, Noll and Eastlake. See the Office Action at pages 3-4. Applicants respectfully disagree. The collective teachings of Safai, Silverbrook, Noll and Eastlake do not teach or suggest a digital camera having a processor that generates a random seed entirely from sensor noise within the digital camera and then uses the random seed to generate a private key and a public key. Silverbrook at column 204, lines 9-19, references the lava lamp based system of Noll as a potential source of random numbers. Thus, Silverbrook is looking to random sources that are external to the digital camera unit 1 of FIG. 1 in Silverbrook. The lava lamp based system of Noll uses a separate digital camera to photograph lava lamps, and then processes the resulting images to obtain a seed. See Noll at

column 4, line 46, to column 5, line 19, and column 6, lines 24-27. It is therefore apparent that Silverbrook is suggesting that a source external to the digital camera unit 1 of FIG. 1 in Silverbrook should be used as a source of random numbers. This is directly contrary to the claimed arrangement in which a digital camera includes a processor that generates a random seed entirely from sensor noise within the digital camera and then uses the random seed to generate a private key and a public key. Accordingly, it is believed that the relied-upon portions of Silverbrook and Noll actually teach away from the claimed invention.

The Eastlake reference fails to supplement the above-described deficiencies of Silverbrook, Noll and Safai as applied to claim 1. The relied-upon portion of Eastlake, at section 5.3.1, describes an arrangement in which a computer system uses an external video input supplied from a camera as a source of random bits. Such an arrangement is similar to what is described in Noll, where the output of an image-based system is used as an external source of randomness for another system. See step 600 in the flow diagram in FIG. 6 of Noll, where a seed obtained by processing the images of the lava lamps is used as an external source input to a pseudo-random number generator. See Noll at column 6, lines 21-35. There is no suggestion in Eastlake that the camera use its own sensor noise to generate its own random seed. To the contrary, Eastlake teaches that the camera output is used as an external source input to a separate computer system.

Accordingly, it is believed that the combined teachings of Safai, Silverbrook, Noll and Eastlake fail to meet the limitations of independent claim 1.

Furthermore, it is believed that insufficient objective evidence of motivation to combine Safai, Silverbrook, Noll and Eastlake has been identified by the Examiner.

The Federal Circuit has stated that when patentability turns on the question of obviousness, the obviousness determination "must be based on objective evidence of record" and that "this precedent has been reinforced in myriad decisions, and cannot be dispensed with." In re Sang-Su Lee, 277 F.3d 1338, 1343 (Fed. Cir. 2002). Moreover, the Federal Circuit has stated that "conclusory statements" by an examiner fail to adequately address the factual question of motivation, which is material to patentability and cannot be resolved "on subjective belief and unknown authority." Id. at 1343-1344.

The Examiner argues that sufficient motivation for the proposed combination is found in the three points made in the Office Action starting at the last line of page 4 and continuing onto page 5. Applicants respectfully disagree. These points appear to be conclusory in nature. For example, the Examiner in point [3] argues that the proposed combination is motivated because it would "obviate the need . . . to carry additional cumbersome hardware." This is conclusory because it relies on an advantage of the claimed invention as alleged motivation for combination of the references. None of the references themselves provide any objective evidence to support this alleged motivation. As noted above, Silverbrook clearly teaches to use an external random source, such as the lava lamp based system of Noll or some other external source as in Eastlake, which is a direct teaching away from the present invention.

It therefore appears that the Examiner in formulating the §103(a) rejection of claim 1 over Safai, Silverbrook, Noll and Eastlake has undertaken a piecemeal reconstruction of the claimed invention based upon impermissible hindsight, given the benefit of the disclosure provided by Applicants.

Independent claims 6-10 and 22 are believed allowable for reasons similar to those identified above with regard to claim 1.

The dependent claims are believed allowable at least by virtue of their dependence from their respective independent claims, and are also believed to define additional patentable subject matter over the proposed combination of Safai, Silverbrook, Noll and Eastlake.

Notwithstanding the foregoing traversal, Applicants have amended independent claims 6, 7, 8 and 10 to clarify that the generation of the private key, or private key and public key, occurs in the digital camera.

In view of the above, the §103(a) rejection of claims 1-25 over Safai, Silverbrook, Noll and Eastlake is believed to improper, and should be withdrawn.

If there are any formal matters remaining after this response, Applicants' attorney would appreciate a telephone call to attend to these matters.

In view of the foregoing, this application is believed to be in condition for allowance, the notice of which is respectfully requested.

Respectfully submitted,

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